

REMARKS/ARGUMENTS

Claims 1-10, following entry of this Amendment, are all the claims pending in this application. By amendment above, claims 1 and 3 have been rewritten, and claim 11 has been canceled.

Reconsideration of the subject patent application and allowance of the claims are respectfully requested in view of the foregoing amendments and the following remarks.

Formalities

As a preliminary matter, claim 3 has been amended to provide antecedent basis for the term "dimples."

Drawing Objections

The Patent Office has objected to the drawings for failing to include the legend "Prior Art" in Figures 1-3. Office Action at page 2, paragraph 1. Applicant has added the legend "Prior Art" to Figures 1-3, and respectfully requests withdrawal of the objection to the drawings.

Further, the Patent Office has objected to Figures 6 and 8 for failing to show every feature of the invention specified in the claims. Office Action at page 2, paragraph 2. In particular, it is asserted that holes 136 must be shown as being encapsulated by the EMC. Id. at paragraph 2A. The holes 136, however, are encapsulated by the EMC 112 as illustrated, for example, in Figure 7. Not every figure must illustrate the same feature (specified in the claims), as long as the feature is illustrated in at least one figure. For example, a feature illustrated in a cross-sectional view, a side view or a bottom view (of a figure) would not necessarily be illustrated in a front view. Since the encapsulated holes 136 are shown in Figure 7, Applicant respectfully requests withdrawal of the objection to the drawings.

Prior Art Rejections

Claims 1 and 8-11 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over admitted prior art ("APA") of Figures 1-3 in view of Fukaya (U.S. Patent No. 5,969,411). The Patent Office asserts that the APA discloses the invention of independent claim 1 with the exception of Applicant's semiconductor chip being mounted via adhesive means and having wires connected with leads of a MLF, and die pad, leads and tie bars having an oblique etching portion. The Patent Office relies on Fukaya to remedy the deficiencies of the APA. However, Applicant submits that independent claim 1 is patentable because: (1) the APA and Fukaya, taken singularly or in combination, fail to disclose patentable features recited in claim 1, and (2) the APA and the disclosure of Fukaya do not render the pending claims obvious because there is no motivation, absent the hindsight reconstruction of the present invention, to modify the APA in accordance with the disclosure of Fukaya.

1. Failure to Teach Features Recited in the Claim

Independent claim 1 recites, inter alia, "the die pad, the leads, and the tie bars have an oblique etching portion," and "wherein an etching solution and an etching method used on the upper surface of the MLF are the same as those used on the bottom surface of the MLF." Fukaya fails to disclose, teach or suggest these features.

Fukaya states that "[a] lead frame 30 is formed by punching or selectively etching a lead frame material plate ... " (col. 4, lines 3-4), "[a] notch can be easily formed through half etching or a press work when the lead frame is punched" (col. 4, lines 49-51), and "[c]hemical processes such as etching may also be used for separating the inner lead from the support member" (col. 5, lines 52-53). Fukaya does not teach or suggest that "an etching solution and an etching method used on the upper surface of the MLF are the same as those used on the bottom surface of the MLF." Moreover, there is no disclosure in the Fukaya reference that die pads, leads and tie bars have an oblique etching portion, notwithstanding the Patent Office's assertion that

the "curved" notch is an oblique etching portion. In other words, the "curved" notch is not formed in each of a die pad, leads and tie bars in the Fukaya reference.

In contrast, the oblique etching portion of the present invention, as set forth in claim 1, is simultaneously formed at an upper and bottom surface with an etching solution, and each of the die pad, leads and tie bars has an oblique etching portion.

2. Flawed Motivation to Combine

The APA and the disclosure of Fukaya do not render claim 1 obvious because there is no motivation, absent the hindsight reconstruction of the present invention, to modify the APA in accordance with the disclosure of Fukaya.

"When a rejection depends on a combination of prior art references, there must be some teaching, suggestion, or motivation to combine the references." In re Rouffet, 47 USPQ2d 1453, 1456 (Fed. Cir. 1998); see, e. g., MPEP § 2143.01. Virtually all inventions are combinations of old elements. See In re Rouffet, 47 USPQ2d at 1457. If identification of each claimed element in the prior art were sufficient to negate patentability, the Patent Office could use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Id. To prevent the use of hindsight based on the teachings of the patent application, the Patent Office must show a motivation to combine the references in the manner suggested. Id. at 1457-58.

In Rouffet, the Court of Appeals held that although all elements recited in the claims of Rouffet's application were disclosed in the applied prior art references, the rejection under 35 U.S.C. § 103 was improper because there was no suggestion as to why one skilled in the art would have been motivated to combine the references in such a manner as to render the claims obvious. Id. at 1457.

The situation is, at best, the same in this case. Even if all elements recited in claim 1 can be found in the APA and the Fukaya reference (although they cannot), there is no reason that one of ordinary skill in the art would have been motivated to

combine the APA and the Fukaya reference in such a manner as to render the pending claims obvious. In fact, the Patent Office's purported rationale for combining the references (e.g., to prevent lead deformation and improve the lead cutting in the APA) is not suggested anywhere in the Fukaya reference; it is no more than a hindsight reliance on the teachings in the present application of the advantages of the present invention.

To be sure, Fukaya states that the support member 32 is suspended from the outer frame 31 by inner leads 36x, rather than tie bars 14a as illustrated in the prior art. Col. 4, lines 15-24. This is adverse to the teachings of the present invention and, in particular, to claim 1, which requires tie bars. Further, the notch indicated at Ra and Rb is formed across the surface of the inner lead, and is formed through half etching or press work when the lead frame is punched. Col. 4, lines 44-50. As discussed above, in the present invention, each of the die pad, leads and tie bars has an oblique etching portion, and the oblique etching portion is simultaneously formed at an upper and bottom surface with an etching solution. Given the above negative teachings of Fukaya, it would not have been obvious to combine the APA and the Fukaya reference as suggested by the Patent Office.

In view thereof, independent claim 1 cannot be rendered obvious over the APA and the Fukaya reference. Thus, the 35 U.S.C. § 103(a) rejection of independent claim 1 should be withdrawn.

Claims 2-5 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over APA in view of Fukaya, and further in view of Brown (U.S. Patent No. 4,918,511) and Masuda et al. (U.S. Patent No. 4,862,246) ("Masuda"). Claims 6 and 7 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over APA in view of Fukaya, and further in view of Murata (U.S. Patent No. 6,483,184). Applicant respectfully traverses these rejections.

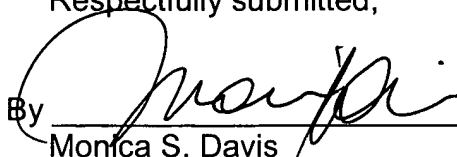
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Dependent claims 2-10 depend directly or indirectly on independent claim 1 and should be allowable for at least the same reasons as discussed above with respect to claim 1. Further, none of the cited prior art references including Brown, Masuda and Murata, remedy the deficiencies of the APA and Fukaya.

Applicant submits that the present application is now in condition for allowance. Reconsideration and favorable action are earnestly requested.

Respectfully submitted,

By



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Attachment: Replacement Sheets
Annotated Sheets Showing Changes

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Amendments to the Drawings:

The attached sheets of drawings (see Appendix) include changes to Figures 1-3, and replace the original sheets of Figures 1-3. In Figures 1-3, the legend "PRIOR ART" has been added.

Attachments: Replacement Sheets
 Annotated Sheets Showing Changes